

**REMARKS**

Please consider the following comments. Following this response, claims 1-7 are pending. Applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks.

***Priority***

In the Office Action Summary, the Examiner acknowledges Applicants' claim for priority and indicates that the certified copy of the priority documents has been received. Applicants respectfully acknowledge this.

***Information Disclosure Statement***

Applicants acknowledge and appreciate receiving an initialed copy of the form PTO-1449 that was filed on February 12, 2004.

***Claim Rejections – 35 U.S.C. § 103***

The Examiner has rejected claims 1-7 under 35 U.S.C. § 103(a) as being allegedly unpatentable over United States Patent No. 6,902,028 to Takatsuku ("Takatsuku"). Applicants respectfully traverse this rejection.

Takatsuku discloses an electric power steering control system that includes a temperature sensor for detecting an ambient temperature. (See, e.g., Takatsuku, abstract, lines 8 and 9, column 1, line 59, through column 3, line 8, and FIG. 2.) This allows the system of Takatsuku to adjust a maximum motor current limit value based on the ambient temperature around the motor, and thereby reduce the danger of the motor overheating. (See, e.g., Takatsuku, column 8, lines 5-22, and FIGs. 6-8.) But this very pointedly does not require that the temperature sensor 75 be in any particular place.

In fact, Takatsuku specifically notes that it is an object of the invention of Takatsuku to obtain an electric power steering control system capable of achieving overheating prevention *even without a temperature sensor being provided to a vicinity of a heat-generating location.* (See, e.g., Takatsuku, column 1, lines 54-58.) So Takatsuku particularly applies to a situation in which the temperature sensor 75 is not near a heat-generating portion of the motor.

In contrast, Applicants' claimed invention relates to a system and method that compensates for the variation in the output of an amplifier in a current detecting circuit that results from the varying temperature of the amplifier. This necessarily requires that a temperature detector be proximate to the amplifier, and can be seen by way of example in Applicants' disclosed embodiments through the operation of the disclosed motor current detecting circuit 14 and temperature detecting circuit 15. (See, e.g., Applicants' specification, page 11, line 10, through page 12, line 4, and FIGs. 1 and 2.)

As shown in this exemplary disclosure, the temperature detecting circuit 15 operates to compensate for a temperature characteristic (i.e., offset voltage) of an amplifier (e.g., the operational amplifier OP1) of the motor current detecting circuit 14 on the basis of a temperature near the amplifier. Accordingly, the temperature detecting circuit 15 is integrated in an IC package in which the motor current detecting circuit 14 is integrated. This makes certain that the temperature detected by the temperature detecting circuit 15 will represent a temperature from the vicinity of the amplifier.

In an effort to better recite this feature of the claimed invention, Applicants have amended claim 1 to recite that the motor current detecting means is integrated in an integrated circuit package, and said temperature detecting means is integrated in said integrated circuit package so as to be situated in the vicinity of said amplifier of said motor current detecting

means. Support for this amendment can be found, for example in Applicants' specification at page 8, lines 1-5, and in FIG. 1.

Nothing in Takatsuku discloses or suggests that a motor current detecting means and a temperature detecting means be both integrated in the same integrated circuit package, as recited in amended claim 1.

The Examiner acknowledges that Takatsuku is silent regarding the position of the temperature sensor 75 relative to the current detection circuit 78. However, she concludes that since FIG. 2 of Takatsuku shows them both positioned within the same control device 7, it would have been obvious to one of ordinary skill in the art to provide the temperature sensor 75 and the current detection circuit 78 proximate to each other, including on the same semiconductor. Applicants respectfully traverse this official notice on the part of the Examiner.

Takatsuku specifically observes that it is difficult, for reasons of construction and cost, to place a temperature sensor in the vicinity of a heat-generating part, and that in such cases, prevention of overheating becomes problematic in the conventional art. Furthermore, it notes that in a case when there exists a plurality of heat-generating parts (or parts at which it is desirable to estimate the temperature thereof), a plurality of temperature sensors and I/F circuits need to be installed. Therefore, there would be a problem that it was disadvantageous in terms of cost and miniaturization. Takatsuku goes on to note that its disclosure was made to solve these problems, and that an object of the present invention is to obtain an electric power steering control system capable of achieving overheating prevention even without a temperature sensor being provided to a vicinity of a heat-generating location. (See, e.g., Takatsuku, column 1, lines 36-58.)

Thus, Takatsuku is specifically addressed to circuits in which the temperature sensor is *not* proximate to a heat generating location. The circuit of Takatsuku uses the detected ambient

temperature to set a coefficient of a current increase rate (kim), and thereby prevent overheating of the motor *without* taking a temperature reading proximate to the heat generating location. As a result, it would be inappropriate for the Examiner to extend the teachings of Takatsuku to apply to an embodiment in which the temperature sensor 75 and the current detection circuit 78 are formed on the same integrated circuit.

If the Examiner desires to maintain this official notice in the next Office Action, Applicants specifically request that the Examiner provide some documentary evidence in that Office Action. (See, e.g., 37 CFR 1.104(c)(2), and MPEP 2144.03(C)).

Claims 2-7 all ultimately depend from claim 1, and are allowable for at least the reasons given above for claim 1.

For at least the reasons given above, Applicants submit that Takatsuku does not disclose or suggest every feature recited in claims 1-7, as amended. For at least these reasons, Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 1-7 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Takatsuku.

#### ***Claim Amendments***

By this response, the applicant has amended claim 1 to recite that the motor current detecting means has an amplifier amplifying a voltage across a shunt resistor through which a motor current of said electric motor flows to output a current detection output indicating a value of said motor current. This amendment is being made to better recite a feature of the claimed invention, and not in response to an art rejection. As a result, this amendment is not to be construed as a surrender of any subject matter between the original claims and the present claims; rather this is merely an attempt at providing one or more definitions of what the applicant believes to be suitable patent protection. The present claims provide the intended scope of

protection that the applicant is seeking for this application. Therefore, no estoppel should be presumed, and the applicant's claims are intended to include a scope of protection under the Doctrine of Equivalents.

***Conclusion***

For all the reasons advanced above, the applicant respectfully submits that pending claims 1-7, as amended are allowable.

In view of the foregoing, the applicant respectfully submits that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

Please charge any unforeseen fees that may be due to Deposit Account No. 50-1147.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Brian C. Altmiller", written over a horizontal line.

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